National Institute of Environmental Health Sciences

Stimulating investment in energy materials and technologies to combat climate change: An overview of learning curve analysis and niche market support

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Abstract:

This paper addresses the probable levels of investment needed in new technologies for energy conversion and storage that are essential to address climate change, drawing on past evidence on the rate of cost improvements in energy technologies. A range of energy materials and technologies with lower carbon emissions over their life cycle are being developed, including fuel cells (FCs), hydrogen storage, batteries, supercapacitors, solar energy and nuclear power, and it is probable that most, if not all, of these technologies will be needed to mitigate climate change. High rates of innovation and deployment will be needed to meet targets such as the UK's goal of reducing its greenhouse gas emissions by 80 per cent by 2050, which will require significant levels of investment. Learning curves observed for reductions in unit costs of energy technologies, such as photovoltaics and FCs, can provide evidence on the probable future levels of investment needed. The paper concludes by making recommendations for policy measures to promote such investment from both the public and private sectors.

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Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

Unspecified Exposure

Geographic Feature:

resource focuses on specific type of geography

None or Unspecified

Geographic Location:

resource focuses on specific location

Non-United States

Non-United States: Europe

European Region/Country: European Country

Other European Country : United Kingdom

Health Impact: ☑

specification of health effect or disease related to climate change exposure

Health Outcome Unspecified

Mitigation/Adaptation: ☑

mitigation or adaptation strategy is a focus of resource

Mitigation

Model/Methodology: ☑

type of model used or methodology development is a focus of resource

Cost/Economic

Resource Type: ☑

format or standard characteristic of resource

Policy/Opinion, Review

Timescale: ☑

time period studied

Time Scale Unspecified